

The Research Training Group (RTG) 2300 ‘**Enrichment of European beech forests with conifers: impacts of functional traits on ecosystem functioning**’ at the Georg-August-University Göttingen in Germany, is currently inviting applications for

11 PhD Positions (f, m, d)

starting on January 1, 2021. The salary is based on TV-L E13 and amounts 65% of a full position for PhD candidates in life science and associated topics and 75% in statistics. The positions are funded by the German Research Foundation (DFG) for 3 years.

The interdisciplinary Research Training Group 2300 was established in 2017. The PhD students enrolled in this program investigate ecological challenges and societal demands on forests in a changing climate. The program focuses on European temperate forests. A central goal is to uncover the impact of mixed compared to monospecific forests on ecosystem functions and processes with a special focus on the importance of functional traits. Our research approaches involve field studies in European beech, Norway spruce and Douglas fir forests and their mixtures, experimental studies to uncover cause-effect relationships, and statistical as well as economic analyses. We hypothesize that mixtures of European beech with conifers show higher functional diversity than pure European beech stands, resulting in higher resilience and providing multiple ecosystem services.

The RTG2300 offers a vibrant academic environment, joint supervision of PhD candidates by thesis committees, and a structured study program with many opportunities to improve scientific and personal skills. The following research groups are offering PhD projects: silviculture, tree physiology (mycorrhiza), plant ecology, soil sciences, animal ecology, wildlife sciences, forest nature conservation, forest modelling, forest economics, and spatial forest structures as well as applied statistics. You can find detailed information on the individual positions below and online at www.uni-goettingen.de/en/623417.html. General information on the RTG2300 and the different projects are available at www.uni-goettingen.de/grk2300.

We are seeking highly motivated candidates, who wish to conduct their PhD training in an interdisciplinary environment. Successful candidates

- will have completed their MSc or equivalent university degree in a subject area relevant for the RTG 2300 program (see details for the different positions below)
- are fluent in English (IELTS min. 6.0 or equivalent) and motivated to learn some German
- are eager to conduct field work
- are keen to collaborate and share data with their PhD colleagues

Your application must include (**compiled as one pdf document!**):

- curriculum vitae including information on posters, presentations, awards and publication list, if applicable
- motivation letter for the preferred project(s) (maximum 1 page). You can list up to three projects
- certificates of studies (if a degree is not yet completed you may also provide a document listing your current grades)
- two references (name and contact information of two senior researchers)
- summary of your MA thesis and if applicable one publication

To apply for this position, **please upload your application in one pdf document via the online application site** https://lotus1.gwdg.de/uni/ufwb/grk_2300.nsf/enter. Further application details are available on the application site. The closing date for applications is **August 2, 2020**. We also encourage advanced Master candidates to apply but successful completion of the MSc or equivalent university degree is mandatory prior to employment.

If you have any questions, please contact the RTG’s coordinator Dr. Serena Müller (grk2300-coordination@forst.uni-goettingen.de, +49-551-3921217) or the potential supervisor for subject specific questions.

The University of Göttingen is an equal opportunities employer and places particular emphasis on fostering career opportunities for women. Qualified women are therefore strongly encouraged to apply as they are underrepresented in the field. The university has committed itself to being a

family-friendly institution and supports their employees in balancing work and family life. The mission of the University is to employ a greater number of severely disabled persons. Applications from severely disabled persons with equivalent qualifications will be given preference.

Please note:

With submission of your application, you accept the processing of your applicant data in accordance with the data-protection law. Further information on the applicable law and data usage is provided in the Hinweisblatt zur Datenschutzgrundverordnung (DSGVO) (www.uni-goettingen.de/hinweisdsdgv).

Subprojects offering PhD positions

Subproject 1 entitled **‘Root distribution, water uptake and growth responses’** (65 % TV-L E13) will be carried out by the Silviculture and Forest Ecology working group of Prof. Dr. Christian Ammer (www.uni-goettingen.de/en/67090.html). The successful candidate will study soil water extraction in mixed and pure stands and analyze high resolution dendrometer data on changes in stem diameter. Functional traits will be determined by stable isotope analysis, including labelling experiments, and analyzing temporal patterns of stem water status. By the time of employment, the successful candidate will already have completed a very good M.Sc. degree in ecological sciences, biological sciences, forest sciences, or a related field with advanced knowledge of tree ecophysiology, stable isotope analysis and the application of explorative statistics is required; knowledge on soil water dynamics is advantageous.

Subproject 2 entitled **‘Tree water relations and drought response’** (65 % TV-L E13) is located in the Plant Ecology working group of Prof. Dr. Christoph Leuschner (www.uni-goettingen.de/en/71395.html). This project seeks to understand responses of beech, spruce and Douglas fir to drought in pure and mixed stands. The main goal is to analyze the tree species’ sensitivity to climate warming by studying the water consumption (sap flux), stem water storage and vulnerability to desiccation (branch desiccation curves) in adult and juvenile trees. By the time of employment, the successful candidate will already have completed a very good M.Sc. degree in ecological sciences, biological sciences, forest sciences, or a related field. For this post, knowledge of tree ecology, skills in ecophysiology/experimental plant ecology and in explorative statistics is advantageous. Experience with ecological field work is beneficial.

Subproject 3 entitled **‘Nutrient uptake and efficiency’** (65 % TV-L E13) is located in the Soil Science of Temperate Ecosystems working group of Prof. Dr. Norbert Lamersdorf (www.uni-goettingen.de/en/73134.html). The main objective of the subproject is to study the nutrient uptake and nutrient cycling of pure and mixed stands at the existing field sites and within the joint pot experiment of the RTG. In close cooperation with SP1 and SP4, stable isotopes will be applied to gain advanced insights into nutrient uptake and use efficient strategies of the applied species and their mixtures under variable soil conditions. By the time of employment, the successful candidate will already have completed a very good M.Sc. degree in ecological sciences, biological sciences, forest sciences, or a related field with profound knowledge in standard field and lab soil science working procedures, experiences in stable isotope applications as well as a strong understanding of nutrient cycling in forest ecosystems.

Subproject 4 entitled **‘Ectomycorrhizal Functions for Tree Nutrition’** (65 % TV-L E13) is located in the Forest Botany and Tree Physiology working group of Prof. Dr. Andrea Polle (www.uni-goettingen.de/en/67024.html). The successful candidate will study traits of ectomycorrhizal fungi for nitrogen and phosphorus nutrition and their links to tree nutrition at the field sites of the RTG and in controlled experiments. Functional traits will be determined by application of stable isotopes, determination of enzymes by biochemical and sequencing techniques and fungal identification. By the time of employment, the successful candidate will already have completed a very good M.Sc. degree in ecological sciences, biological sciences, forest sciences, or a related field. Furthermore, experience with molecular or eco-physiological methods and statistics is required; knowledge of ecological concepts is advantageous.

Subproject 5 entitled **‘Decomposer community structure and decomposition processes’** (65 % TV-L E13) is located in the Animal Ecology group of Prof. Dr. Stefan Scheu (www.uni-goettingen.de/en/107728.html). The main objective of the subproject is to understand the response of the decomposer food web and its functioning when planting Douglas-fir in comparison to European beech and Norway spruce. By the time of employment, the successful candidate will already have completed a very good M.Sc. degree in ecological sciences, biological sciences, forest sciences, or a related field with skills/knowledge in entomology, soil ecology, ecological concepts, statistics, programming and ecological fieldwork. Knowledge of soil animal and microbial ecology as well as food web ecology is beneficial.

Subproject 6 entitled **‘Arthropod diversity and functioning in mixed versus pure stands’** (65 % TV-L E13) is located in the Forest Nature Conservation group of Prof. Dr. Andreas Schuldt (www.uni-goettingen.de/en/588022.html). The main goal of this subproject is to analyze the impact of stand structure and tree species composition on the community composition, diversity, and functions of arthropods within and across different forest stand types. By the time of employment, the successful candidate will already have completed a very good M.Sc. degree in ecology, biological sciences, forest sciences, or a related field. Knowledge of ecological concepts, arthropod identification, statistics, and experience with ecological fieldwork are essential. In addition, experience with the identification of birds or bats (as predators of arthropods) is an asset. Furthermore, a driver’s license is required.

Subproject 7 entitled **‘Effects of small mammal communities on seed predation and seed dispersal’** (65 % TV-L E13) is located in the Wildlife Sciences group of Prof. Dr. Niko Balkenhol (www.uni-goettingen.de/en/450568.html). This subproject will characterize the influences of tree mixing on small mammal communities and associated seed removal. Specifically, we will evaluate how different rodent species are affected by tree mixture and assess seed preferences and seed removal movements of detected small mammal species. Furthermore, we will assess whether differences in small mammal communities alter seed predation rates and seed dispersal, respectively. The subproject will involve a substantial amount of field work to map habitat and to capture, radio-collar and track small mammals on different forest plots, so candidates possessing relevant field experience are particularly encouraged to apply. By the time of employment, the successful candidate will already have completed a very good M.Sc. degree in ecological sciences, biological sciences, forest sciences, or a related field with skills/knowledge in ecological concepts, analysis of spatial data and ecological fieldwork. Certifications in animal handling and care (e.g., European FELASA or equivalent), and a driver’s license are beneficial.

Subproject 9 entitled **‘Predicting structural changes and growth in pure and mixed stands of European beech, Norway spruce, and Douglas-fir’** (65 % TV-L E13) offers one PhD position in Forest Growth Research located in the growth modelling group of PD Dr. Matthias Albert at the Northwest German Forest Research Institute (NW-FVA), Göttingen (www.nw-fva.de/index.php?id=16). The successful candidate will be employed at the NW-FVA. The general objective of this subproject is to refine existing crown models, analyze crown structure dynamics, and to apply novel crown models in statistical growth models to predict single tree growth. By the time of employment, the successful candidate will already have completed a very good M.Sc. degree in ecological sciences, biological sciences, forest sciences, or a related field with knowledge in growth modelling, statistics, and R programming. Experience with field work and ecological concepts is beneficial.

Subproject 10 entitled **‘Bayesian Semiparametric Regression’** (75 % TV-L E13) is located in the Statistics and Econometrics group with Prof. Dr. Thomas Kneib (www.uni-goettingen.de/en/264255.html). The general objective of this subproject is to develop flexible and practical forms of regression models for the type of data collected within the RTG. A particular focus will be on distributional regression models as well as structural equation models as flexible tools for modelling complex relations in empirical data. By the time of employment, the successful candidate will already have completed a very good M.Sc. degree in statistics, data science, computer science, mathematics or other areas related to the scientific work of the RTG with a strong focus on quantitative methods.

Subproject 12 entitled **‘Economic implications of species mixture and structural diversity in European beech stands enriched with coniferous trees’** offers one position in bio-economic modelling (65 % TV-L E13) located in the department of Forest Economics and Sustainable Land-use Planning of Prof. Dr. Carola Paul (www.uni-goettingen.de/en/586895.html). The main objective of this subproject is to reveal the effects of tree species composition and structural diversity on the expected level and stability of economic returns. For this position candidates should have completed a very good M.Sc. in forest sciences, ecological sciences, environmental economics or a related field with skills/knowledge in bio-economic and statistical programming.

Subproject 13 entitled **‘Architectural traits of trees in response to different neighborhoods and their importance for stand structural characteristics’** (65 % TV-L E13) is located within the junior research group “Laser scanning” of Dr. Dominik Seidel and affiliated with the silviculture group of Prof. Dr. Christian Ammer (www.uni-goettingen.de/en/75916.html). The main objective of this subproject is to quantify the effects of tree species mixture on single-tree architectural traits of beech, fir and Douglas-Fir trees (e.g. symmetry, branching pattern, fractal characteristics, crown surface area) and how they determine the overall stand characteristics, such as space occupation or stand structural complexity. By the time of employment, the successful candidate will already have completed a very good M.Sc. degree in ecological sciences, biological sciences, forest sciences, or a related field with skills/knowledge in ecological concepts, statistics, programming and ecological fieldwork. For this position, a deep interest in spatial data, 3D data and analysis and laser scanning is mandatory.